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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,232	02/11/2004	Norio Takahashi	F97ED0740-DIV3	9905
26071	7590	08/22/2006	EXAMINER	
JUNICHI MIMURA OKI AMERICA INC. 1101 14TH STREET, N.W. SUITE 555 WASHINGTON, DC 20005			PATEL, ISHWARBHAI B	
			ART UNIT	PAPER NUMBER
			2841	
DATE MAILED: 08/22/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,232

Applicant(s)

TAKAHASHI, NORIO

Examiner

Ishwar (I. B.) Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2006.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6,7 and 13-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6,7 and 13-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed on June 7, 2006.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 6 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by Suzuki (US Patent No. 5,925,445).

Regarding claim 6, Suzuki, in figure 3, discloses a circuit board for a semiconductor device comprising: a plurality of pads (2, on the left of the figure) on which the semiconductor device is to be mounted, said pads being formed on the circuit board (1), and said pads being disposed in a first line (see figure); a plurality of terminals (7, on the right side of figure) formed on a side edge of the circuit board, said terminals being disposed in a second line (see figure), which is in parallel to said first line of said pads (see figure); a resist film (4b, 4c) covering an area on the circuit board between said pads and said terminals; and a barrier formed between said first line of said pads and said second line of said terminals, said barrier including a plurality of

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trench (plurality of trenches formed between the pad 2 on the left of the figure and the terminals 7 on the right side of figure) disposed along said terminals, and said trenches being formed in said resist film (see figure).

Regarding the recitations "for the semiconductor devices", line 3, and "for an external device", line 6, the language "for the semiconductor devices", and for an external device", required that the pads or terminals are to be suitable to be used for the semiconductor devices and for the external device. The pads and terminals of Suzuki can be used for those intended use. Therefore, Suzuki meets the limitation. Further, it has been held that the a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ 2d 1647 (1987).

Regarding claim 7, Suzuki further discloses said trenches are parallel to each other (see figure).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 13-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki as applied to claim 6 above.

Regarding claim 13, Suzuki discloses all the features of the claimed invention including the trenches as applied to claim 6 above, but does not disclose a distance between trenches is 1 mm. However, as can be seen from the figure the distance between the trenches will depend upon the size of the pad required as the pads are exposed between the resist. The pad size will depend upon the interconnection structure with the corresponding interconnect to be connected to have reliable interconnection. Further, it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of applicant's invention to provide the structure of Suzuki with a distance between trenches as 1 mm, in order to have desired width of the pad to have a reliable interconnection.

Regarding claim 14, the modified structure of Suzuki discloses said terminals are disposed in a certain length, which is shorter than a length of said barrier (see figure).

Regarding claim 15, the modified structure of Suzuki discloses a depth of the barrier equals the thickness of the resist film (see figure).

Regarding claim 16, the modified structure of Suzuki discloses all the features of the claimed invention including the trench had a width of 1 mm, as applied to claim 13 above.

Regarding claim 17, the modified structure of Suzuki discloses said terminals are disposed in a certain length, which is shorter than a length of said barrier (see figure).

Regarding claim 18, the modified structure of Suzuki discloses a depth of the barrier equals the thickness of the resist film (see figure).

Regarding claim 19, the modified structure of Suzuki discloses each trench had a width of 1 mm as applied to claim 16 above.

Regarding claim 20, the modified structure of Suzuki discloses said terminals are disposed in a certain length, which is shorter than a length of said barrier (see figure).

Regarding claim 21, the modified structure of Suzuki discloses a depth of the barrier equals the thickness of the resist film (see figure).

Response to Arguments

6. Applicant's arguments filed June 7, 2006 have been fully considered but they are not persuasive.

The applicant argues that the prior art of Suzuki do not disclose a plurality of pads, does not disclose the pad being disposed in first line, does not disclose a plurality of terminals, does not disclose the terminals being disposed in second line, which is in parallel to the first line and does not disclose that the terminals are formed on a side edge of the circuit board. Applicant further argues that from figures 3 and 4 of Suzuki it is clear that there are resist films 4b and 4c between the pad (2) and the terminal (7), however there is a single trench, not plural, between the resist film 2b and 2c.

These are not found to be persuasive. As can be seen, figure 3 of the prior art of Suzuki, disclose the pads (2) and (7) and though figure 3 is a fragmentary plan view of the board, the central square region is for mounting the device and the pads and terminals are on the peripheral region (column 5, line 45-60). Therefore, the terminals are considered on one of the edges of the board. Also, as can be seen from the figure the pads and terminal (those on the left and right side of the central region are respectively in a line parallel to each other. Also, there are plural number of channel between the pad on the left of the central region and terminals on the right side of the central region. Therefore, Suzuki meets the limitation.

The rejection with prior art of Yasuhiro (Japanese Patent No. JP402113596A) and that with Japanese Application Number 1998JP-0137329 (JP329) have been dropped.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jeter (US Patent No. 4,859,808), in figure 3, discloses a structure with plurality of channels (22) formed by the dielectric film (20) between the pads and terminals (contact region 16 on the left and right side of the central region).

8. Applicant's amendment necessitated the new ground(s) / new explanation of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ishwar (I. B.) Patel whose telephone number is (571) 272 1933. The examiner can normally be reached on M-F (8:30 - 5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (571) 272 1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ibp
August 17, 2006


ISHWAR PATEL
PRIMARY EXAMINER